



DEPARTMENT OF DEFENSE  
WASHINGTON HEADQUARTERS SERVICES

WASHINGTON, DC 20301-1155



(RE&F-SOHO)

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MEMORANDUM FOR ALL DIRECTORS

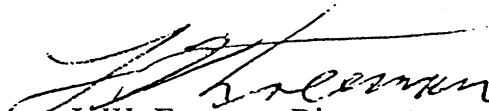
SUBJECT: Confined Space Entry Program

Transmitted herewith is the Real Estate and Facilities Directorate's Confined Space Entry Program. Authority for this program is contained in the Code of Federal Regulations, 29 CFR 1910.146. This is a new program.

Each division shall implement this program where applicable. Program support shall be obtained from the Safety and Occupational Health Office (SOHO). Program implementation and maintenance will be the responsibility of the respective Directors.

Additional information is available from the SOHO at telephone #33683.

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L.W. Freeman, Director  
Real Estate & Facilities

PERMIT REQUIRED CONFINED SPACE ENTRY PROGRAM

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(RE&FD-SOHO)

OSD/WHHS  
REAL ESTATE AND FACILITIES DIRECTORATE  
PENTAGON  
WASHINGTON, D. C. 20301-1155

SOHO  
CONFINED SPACE PROGRAM

1. Purpose and Scope: To provide guidance and procedures for confined space entry and safe work practices involving confined spaces. This guide establishes and prescribes certain procedures and precautionary measures to be taken in order to prevent unauthorized entry and for ensuring safe entry into and work within confined spaces, and to prevent injury or loss of life to individuals/employees responsible for entering or working in any confined space.
2. Applicability: The provisions of this document shall apply to all elements, divisions and sections of the Real Estate and Facilities Directorate, Washington Headquarters Services. The area of responsibility shall be the Pentagon Complex; to include

the Pentagon, Pentagon Utilities Plant (PUP), Federal Office Building #2 (FOB-2), Defense Nuclear Agency Building at Hybla Valley (DNA), Henderson Hall property, and the U.S. Court of Military Appeals.

Tenant agencies housed within the Pentagon Complex shall also be required to follow these procedures when entering or working in confined spaces.

Private contractors and their subcontractors performing confined space work within the Pentagon Complex shall also be required to submit to the SOHO for approval a copy of their confined space entry program.

These guidelines and procedures are in no way intended to replace, alter or supersede other regulations and standards (e.g., OSHA, NIOSH, ANSI, etc.) but are established to enhance the In-House Safety and Occupational Health Office Program for confined space entry.

These guidelines will be considered the minimum for confined space entry and may be supplemented by operational procedures for such entry as is necessary and determined by the designated supervisor(s) and the WHS Safety and Occupational Health Office.

3. Definitions:

a) A Confined Space is that space, which by design, contains at least one or a combination of the following:

(1) limited openings for entry and exiting; (2) unfavorable natural ventilation; (3) could contain or produce dangerous air contaminants; (4) have an oxygen deficient atmosphere; or (5) is not intended for continuous employee occupancy.

Confined spaces include, but are not limited to, manholes, storage tanks, sewers, boilers, silos, tunnels, bins, process vessels, vats, pipelines, furnaces, underground utility vaults, ventilation or exhaust ducts, and open top spaces/tanks more than 4 feet in depth. A listing of confined spaces locations for the Pentagon Complex is attached. See Appendix A.

b) Attendant - means an individual(s) stationed outside the permit required confined space who is trained, as required by this policy, and who monitors the authorized entrants inside the confined space.

c) Authorized entrant - means an employee who is authorized by the supervisor/Confined Space Crew Supervisor to enter a permit required confined space. Authorized Entrants may rotate duties, serving as attendants if the permit so states. Any properly trained person with the authority to authorize entry of other employees may enter the permit space during the term of the permit provided the attendant is informed of that entry.

d) Blanking or blinding - means the absolute closure of a pipe, line or duct, by fastening across its bore a solid plate or cap which extends at least to the outer edge of the flange at which it is attached and which is capable of withstanding the maximum up-stream pressure.

e) Confined Space Crew Supervisor (CSCS) - means a properly trained person with the authority to authorize entry of other trained employees to enter the permit required confined space.

f) Double block and bleed - means the closure of a line, duct or pipe by locking and tagging a drain or vent which is open to the atmosphere in the line between two locked-closed valves.

g) Emergency - means a sudden or unexpected situation that calls for immediate action without delay or occurrence or event(s) that may be internal or external to the confined space which could endanger entrants.

h) Entry - means the act by which a person intentionally passes through an opening into a permit required confined space, and includes ensuing work activities in that space. The entrant is considered to have entered as soon as any part of the entrant's body break the plane of an opening into the space.

i) Entry permit - means the written or printed document (see Appendix B) established by the DOD Safety and Occupational Health Office, the content of which is based on the hazard identification and evaluation for that confined space and is the instrument by which the supervisor authorizes his or her employees to enter that permit required confined space, and is in the possession of the attendant on-site.

j) Entry permit system - means the written procedures for preparing and issuing permits for entry and returning the permit space to service following termination of entry. Also designates, by name or title, the individuals who may authorize entry. The permit shall be maintained on file for one year.

k) Hazardous Atmosphere - means an atmosphere which exposes employees to a risk of death, incapacitation, injury or acute illness from one or more of the following causes:

(i). flammable gas, vapor, or mist in excess of 10% of its lower flammable limit (LFL);

(ii). an airborne combustible dust with a concentration which obscures vision at a distance of five feet (1.52 meters) or less;

(iii). an atmospheric concentration of any substance for which a permissible exposure limit is published in Subpart Z of 29 CFR Part 1910 and could result in employee exposure in excess of its permissible limit(s);

(iv). an atmospheric oxygen concentration below 19.5% or above 23.5%.

(v). any atmospheric condition recognized as immediately dangerous to life and health.

l) Hot work permit - means the written authorization to perform operations which could provide a source of ignition, such as riveting, welding, cutting, burning or heating.

m) Immediately Dangerous To Life Or Health (IDLH) - means any workplace condition which poses an immediate threat of loss of life; irreversible or immediate - severe health effects, eye damage, irritation or other conditions which could impair escape from the permit space.

n) Isolation - means separation of a permit space from unwanted forms of energy which could be a serious hazard to permit space entrants (i.e.: lockout and/or tagout).

o) Oxygen Deficient Atmosphere - means an atmosphere containing less than 19.5 percent oxygen by volume.

p) Oxygen Enriched Atmosphere - means an atmosphere containing more than 23.5 percent oxygen by volume.



q) LEL (Lower Flammable Limit) - means a flammable gas, vapor or mist in excess of 10 percent of its lower flammable limits. (LEL and LEL are considered equivalent terms.)

r) LEL (Lower Explosive Limits) - means the lowest concentration, air-fuel mixture, at which a gas can ignite.

s) MSDS - Material Data Safety Sheet

t) Inerting - the displacement of the atmosphere in a permit space by noncombustible gas (such as nitrogen) to such an extent that the resulting atmosphere is non combustible.

u) Retrieval Line - means a line or rope secured at least to the worker by a chest-waist or full-body harness, and with its other end secured to either a lifting device, or to an anchor point located outside the entry portal.

v) Permit-Required Confined Space - means a confined space that presents or has a potential to present one or more of the following: (1) an atmospheric hazard; (2) an engulfment hazard; (3) a configuration hazard; or (4) any other recognized serious hazard.

#### 4. Policy and Procedures

a) This policy establishes certain guidelines and procedures as elements of an aggressive Safety and Occupational Health Program to protect DOD personnel from injuries, deaths, and occupational illnesses when entering and/or working in confined spaces. Such programs conform to the Occupational Safety and Health Act (OSHA) of 1970 and the DOD-Instruction #6055.1, Occupational Safety and Health Program.

b) No employee/individual shall be permitted to enter any confined space until a complete assessment of that space is made by the SOHO, or through the SOHO by a Certified Industrial Hygienist, and specific authorization by entry permit and/or specific operating procedure is obtained from the SOHO.

c) Personnel will not enter a confined space for any purpose without prior determination of relative hazard(s).

d) Classification of a confined space will be based on the most hazardous condition of the working area, determined by evaluation and initial testing by a certified industrial hygienist (CIH) with the assistance of SOHO.

e) Entry permits must be submitted by the work supervisor to the Safety and Occupational Health Office (SOHO) as far in advance as possible prior to the work to be conducted in such space. This submittal is not a prerequisite to working in a confined space. However, a copy of the permit shall be forwarded to SOHO.

f) In order to prevent inadvertent or unauthorized entry into confined spaces, such areas shall be posted permanently by the responsible supervisor. Signs should contain the following information: "DANGER-CONFINED SPACE-DO NOT ENTER-PERMIT REQUIRED

FOR AUTHORIZED ENTRY, OR (ENTRY BY PERMIT ONLY). See Appendix C for an example of this sign.

5. Responsibilities: Supervisors

a) Directors, Managers, Building Managers, the Safety Office, etc. will: Ensure that the policies stated herein are carefully followed within their areas of jurisdiction, to include assigning an individual responsible for reporting data necessary to assess the particular confined space entry.

b) Supervisors/Confined Space Crew Supervisors will:

(1) Be responsible for entry and work in confined spaces and for ensuring that the requirements of this guide are implemented.

(2) Notify by permit the SOHO when work is to be accomplished in a confined space.

(3) Ensure any employees, whose daily tasks may involve them entering a confined space, are aware and familiar with content and requirements of this guide.

(4) Review plans and scope of work and initiate the confined space entry permit.

(5) Ensure that all workers assigned to tasks involving confined space entry are thoroughly familiar with all appropriate regulations and guidelines for confined space entry procedures, via training.

(6) Ensure precautionary measures specified in permit or authorization are followed.

(7) Notify the SOHO immediately when an accident, emergency situation, IDLH situation, or other hazardous conditions and/or situations has occurred during a confined space entry project.

(8) Notify the Defense Protective Service, phone x75555, in the event of an accidental injury, death or incident during a confined space entry project.

C) Safety and Occupational Health Office will:

(1) Identify and establish a list of known confined spaces and update this list annually (see Appendix A).

(2) Assist supervisors and review specific instructions for work in confined spaces.

(3) Provide training support for all training efforts.

(4) Provide technical assistance for all matters of employee safety, health and property conservation.

(5) Perform monitoring of potential hazards in confined spaces when required.

(6) Assist the supervisor in assessing hazards and determining adequacy of protective measures.

(7) Assist in identification of personal protective equipment.

d) Civilian Employees Health Services (CEHS) will:

(1) Provide an annual physical examination, if so determined as necessary by the medical professionals, for all personnel involved in confined space operations that will include as a minimum:

- Pulmonary function tests (specifically in relation to the use of respiratory protective equipment).

- Visual and hearing acuity.

- General Physical ability to carry out assigned duties in confined spaces.

e) Employees will:

(1) Follow the provisions set forth in this guide.

(2) Wear appropriate personal protective and safety equipment as prescribed and in accordance with OSHA.

(3) Notify their supervisor(s) and the SOHO when situations develop which could create a potentially hazardous confined area or other types emergency.

6. Procedures for Confined Space Entry

a) Specific Guidelines

(1) The Confined Space Crew Supervisor (CSCS) shall determine if the normal job procedure must be revised as the first step in confined space work pre-plan. Job/work procedures should be developed and maintained for all confined spaces.

(2) Before personnel are allowed to enter a confined

space, a Confined Space Entry Permit shall be completed (see Appendix B). This permit will be issued and signed by the supervisor in charge of the project or repair(s) to be made in the confined space.

(3) The CSCS shall review and verify all items listed on the confined space entry permit before entry is approved.

(4) A permit will be valid for only one shift or job. A new permit is required before a relief shift/second shift starts work.

(5) Permits shall be posted in a conspicuous location adjacent to the confined space access opening or kept near by for quick presentation upon request by a SOHO professional or other authorized official(s). Failure to produce this permit will require immediate evacuation of the confined space.

(6) Permits shall be retained at the main office of the entrants (employee) as well as at the SOHO for a period of at least one (1) year. Permits documenting levels of toxic agents and subject employee exposure shall be retained indefinitely (i.e. 30 years).

(7) Only after the permit is signed and issued shall entry personnel be allowed to enter a confined space. Approval acknowledges that all personnel have been adequately trained and equipped.

(8) Pre-entry orientation shall be conducted, by the CSCS, for entry personnel and attendant standing by the confined space.

(9) Entry personnel shall be provided with the proper personal protective equipment (PPE) and be thoroughly trained in the proper use of the PPE.

(10) A life line shall be attached to the employee's safety harness and secured outside the confined space access opening during all entries. Where use of a lifeline compromises the safety of the entrant(s), an alternate retrieval method will be employed. The alternate methods will be reviewed by the SOHO on a case-by-case basis.

(11) Atmospheric testing shall be conducted before entry (just prior to entry) and continuously during entry, to ensure a safe working atmosphere. If any unsafe conditions are detected efforts must be taken to correct the deficiencies.

(12) While workers are inside a confined space, another person (the attendant) shall be positioned outside to summon help in the event assistance is needed. The attendant must make frequent contact with the person(s) inside the confined space. The attendant must be trained as well as knowledgeable in the quickest way to summon help if needed and will understand that entering the confined space must be avoided until help arrives. The first attendant must not enter the confined space until a fully qualified second attendant has arrived at the site. No attendant shall enter the space unless trained, qualified as a rescue person, and is equipped with the necessary personal protective equipment.

(13) Rescue equipment shall be readily available at the confined space for immediate use by rescue personnel. When entry is made through a top opening, a hoisting device, such as a tripod, shall be provided and in-place for lifting employees out of the space.

(14) Cylinders of compressed gases (acetylene and oxygen, argon, etc.) shall never be taken into a confined space and shall be turned off at the cylinder valve when not in use. Self-contained Breathing Apparatuses (SCBA) are the exception.

b) Emergency Procedure:

In-House vs Outside Rescue Team

Whether an in-house or outside rescue team is used, the first step in an emergency situation must be to contact the Defense Protective Service (DPS), phone 697-5555. The DPS must be notified of the details of the situation (where, how many persons involved, etc.), and any actions taken to address the situation.

1) In house or In-Plant Rescue Team. If the in-house or in-plant rescue team concept is used, the supervisor, in conjunction with the Safety and Occupational Health Office, shall ensure that:

- (i) Employees assigned to an in-house rescue team are provided with and trained to use properly the personal protective equipment, including



respirators, and rescue equipment necessary for making rescues from the confined or permit required spaces.

- (ii) The in-house rescue team is trained to perform the assigned rescue functions and has received the training required for authorized entrants.
- (iii) The supervisor must ensure rescue teams practice making permit space rescues at least once every six months, by means of simulated rescue operations in which they remove dummies, mannequins or personnel through representative openings and portals whose size, configuration and accessibility closely approximate those of the permit spaces from which rescues may be required.
- (iv) At least one member of each rescue team maintains current certification in basic first-aid and cardiopulmonary resuscitation (CPR) skills.
- (v) In cases of emergency, summon help immediately. If a person is down (collapsed, unconscious, etc.) for no apparent reason, assume that toxic gases, oxygen deficiency, or both, could be present. Rescue personnel must respond wearing full protective gear and self-

contained breathing devices. DO NOT ENTER THE CONFINED SPACE WITHOUT PROPER PROTECTIVE EQUIPMENT. It is a natural tendency to rush into a confined space to save a person, but many people have been killed because they rush into a space without wearing protective equipment, including self-contained breathing apparatus. An oxygen deficient atmosphere will cause a person to lose consciousness immediately and lead to a quick death. Certain toxic gases will also yield the same results.

If a person falls in a confined space and has an apparent back injury, remember that lack of oxygen or a toxic gas could have caused the person to lose consciousness and fall.

2) Outside Rescue Team. If the use of the outside rescue services concept is chosen, the supervisor, manager, or other authoritative personnel in charge shall ensure that the designated rescuers are aware of the hazards they may confront when called on to perform rescues at the Pentagon complex, so that the outside rescue team can equip and conduct itself appropriately. The supervisor or authoritative personnel in charge must devise a standard procedure for alerting or calling in an outside rescue team, giving specific details on the location, hazards involved and the nature of the incident. The

procedure is to be documented and reviewed by the SOHO. The written procedure must be kept in a central location. An outside rescue team may involve local, state or private rescue squads or teams.

7. Planning For Entry: The key to a safe operation rests on a thorough evaluation of the job and implementation of all appropriate protective measures prior to, during and after entry. Prior to each entry, the appropriate life safety and personal protective equipment to be used by the entrants shall be determined by the SOHO. The following establishes the planning that is required prior to approval and issuance of a permit:

a) General Preparations

(1) Survey the surrounding areas to establish what steps must be taken to avoid the drifting of vapors into or out of confined spaces.

(2) Establish a list of possible contaminants and the potential hazards and review all material safety data sheets (MSDS) where chemicals are used or stored

(3) Determine what general conditions will exist in the space (e.g., inadequate lighting, wet surfaces, sludge, water, etc.).

(4) If flammables are present, control sources of ignition:

(i) Barricade area to prevent ignition sources within the immediate area.

- (ii) Prohibit all open flame operations within the immediate area.
- (iii) Check all electrical equipment in the immediate area for approved type.
- (iv) Use only intrinsically safe electrical equipment within the area.  
within the area.

b) Isolating and Securing (Lockout).

Before personnel are allowed to enter a confined space, the space shall be isolated and secured to prevent entry of hazardous materials (lockout). All lockout/tagout procedures must be performed in accordance with the protocol established in the 29 CFR 1910.147, Lockout/Tagout of Hazardous Energy. Isolation can be achieved, as required, by the following possible lockout/ tagout solutions:

- (1) Capping all pipelines or ducts to the confined space.
- (2) Removing a section of pipe or duct.
- (3) Inserting a full pressure blank in the lines or duct and tagging the first connection from the confined space. The blank shall be of material that will not be affected by any liquid or gas which it would contact and of sufficient strength to withstand the maximum pressures that could be exerted against it.
- (4) Closing and locking at least two valves in the line and locking open a drain between the two valves. When the

material in the line presents a hazard from temperature, high pressure, flammability or toxicity, appropriate steps shall be taken to discharge or contain the material in a safe manner.

(5) No tags, locks, blanks or any other devices shall be removed, nor shall the system be energized, without proper authority and until the confined space entry is completed.

(6) Because of the nature of sewer systems, blocking of all laterals to sewers or storm drains is generally not feasible. Atmospheric testing and air quality maintenance must be reviewed and applied as the conditions warrant.

c) Atmospheric Testing

Confined spaces may contain hazardous atmospheres. To protect persons against such hazards, atmospheric tests shall be conducted prior to entry to determine the type and extent of hazardous materials present, the procedures required to eliminate or reduce them to Federally mandated permissible levels, and required personal protective equipment. Testing shall be done remote from the confined space using atmospheric testing devices. All testing or monitoring equipment or devices must be calibrated before and after use in accordance with the manufacturer's guidelines. Appropriate records must be kept of the calibration procedures and results.

(1) Flammable Atmospheres

(i) Before entry into any confined space is approved, the atmosphere shall be tested to determine what is in the atmosphere and at what concentration.

(ii) If the atmospheric tests show flammable concentrations present, the space shall be ventilated, prior to and during entry, with explosion/spark proof equipment to reduce the concentration to below the Lower Explosive Limit (LEL) for the substance or eliminate the concentration. Concentrations of flammable gases or vapors may be toxic; therefor, when testing, make sure tests are conducted for toxic materials, if appropriate.

(2) Oxygen Deficient Atmospheres

(i) Before personnel are allowed to enter a space where there may be an oxygen deficiency. The confined space atmospheres shall be tested.

(ii) If tests indicate the atmosphere contains less than 19.5 percent or more than 23.5 percent oxygen, the space shall be ventilated until the tests show a safe level which can be maintained during the operation. The ventilation shall continue for the entire entry. The monitoring shall also be performed for the duration of the entry.

(iii) Carbon dioxide, which may be used as an inerting gas or is generated by fermentation, may exist in high concentrations even though the oxygen content in the space is at a safe level. Spaces suspected of having high carbon dioxide concentrations shall be tested.

(3) IDLH and PEL Atmospheres(Immediate Danger to Life and Health and Permissible Exposure Level)

(i) Before entry into a confined space, if any known

or suspected toxic agents are present, the atmospheres shall be tested for specific agents by trained personnel.

(ii) If the test reveals a hazard to life or health, the space shall be ventilated prior to and during entry to render the atmosphere non-hazardous to life or health and to maintain a safe condition during the operation.

(iii) Airline respirators or self-contained breathing apparatus with escape bottle shall be worn in all cases when an IDLH atmospheres exist, is known to exist, or could develop during the entry.

(iv) The testing of the atmosphere for a particular toxic material is not necessary where the presence of that material is known by virtue of a previous test and appropriate personal protective equipment is available.

(4) Testing Equipment

a) Testing for flammability shall be taken with an intrinsically safe combustible gas indicator or other appropriate combination gas detector approved by the Safety Office.

b) Combustible gas detectors shall be set to alarm at 10% above the lower explosive limit.

c) Tests for oxygen shall be taken with a direct reading instruments or other appropriate combination type detector. Colorimetric tube methods of detection are not permissible.

d) Test for concentration of IDLH materials shall be made by the industrial hygienist/Safety Office with

instrumentation specific for the substance to be tested.

e) All test equipment shall be calibrated in accordance with manufacturer's specifications and tested to ensure that all units are in proper operating condition at all times. All instruments shall be field checked immediately prior to use.

f) For equipment not used frequently, a monthly field check shall be conducted to ensure availability of equipment.

(5) Purging/Ventilating

The confined space shall be purged/ventilated with fresh air prior to entry, using an approved mechanical air blower or exhauster. In cases where it is not productive to ventilate because residual material cannot be removed safely, approved personal protective equipment and continuous airline or approved self-contained breathing apparatus shall be worn.

a) Ventilating is most successfully accomplished by choosing the best location for the blower discharge or suction to create a cross flow of air, thus eliminating pockets of contaminated air.

b) The suction discharge from the confined space must be directed into an area where it will not be a flammability or toxicity hazard. Do not position the discharge near air intakes for buildings or rooms.



c) If pneumatic blowers are used within the confined space, the supplied air shall be of breathing quality..

(6) Removal of Residual Material

Residual materials in the confined space shall be removed before work is started. Sludge or caked on material shall be removed before entry as much as possible by external means.

a) Exceptions can be made only if low hazard materials are involved and if the employee is totally isolated from exposure to any harmful residual materials or hazards, i.e., suffocation hazard or partially filled silos, coal or ash bunkers or dust silos and crushing hazards of materials caked on top or sides of tanks or silos.

b) In cases where the residual material is flammable and complete removal is not possible, entry shall be permitted only if dilution ventilation is provided before and during the entry process. Continuous mechanical ventilation shall be provided while work is in progress and until the job is completed. If the combustible gas test indicates any positive or increased readings, immediately abandon the space. Conduct an investigation to determine if safe entry and work can be performed and to determine if safe entry and work can be continued. However, hot work (welding) or ignition sources shall not be permitted inside any confined space where there is a positive reading on the combustible gas detector.

c) Where hazardous dust may be encountered, an evaluation by the industrial hygienist or the SOHO shall be conducted to determine what hazards might exist if entry is required, whether all mechanical equipment to be used is of the proper type to reduce or eliminate an explosion hazard, and what respirator and other personal protective equipment is to be used.

(7) Air Quality Maintenance

a) If there is a possibility of residual air contamination or oxygen deficiency or if, as part of the work procedure, hazardous materials are generated (such as painting, welding, sandblasting, or desorbing of materials from walls) or there is a known potential for a hazardous atmosphere, then one or more methods listed below shall apply. Each case shall be evaluated individually to determine the required mode(s) of air quality maintenance. The job procedure shall define the appropriate method(s). The selection of a method shall have sufficient backup such that the failure of one system will not result in an injury or death. The following methods shall be considered:

(i) Continuous mechanical ventilation shall be applied in accordance with paragraph 6 (b) above. Ventilation equipment shall not obstruct the exit opening and shall be portable so as not to hinder the egress. Such equipment shall be labeled as safe for service used. The volumetric air flow rate shall be of sufficient flow for the anticipated contaminant concentration.

(ii) Approved positive pressure or pressure demand airline respirators (NIOSH/MSHA approved) with escape backup shall be worn by persons inside the confined space.

(iii) Continuous air monitoring to detect the presence of hazardous materials or oxygen concentrations shall use the following test methods:

- .....Combustible gas detector (direct reading)
- .....Oxygen analyzer (direct reading)
- .....Specific direct reading gas analyzer for individual contaminants.

Direct reading colorimetric tubes are not an approved monitoring media.

b) When welding or burning will take place inside a confined space, continuous ventilation and continuous use of airline respirator or pressure demand self-contained breathing apparatus shall be required for all persons while inside the confined space.

(8) Personal Protective Equipment

a) Respirators (NIOSH/MSHA Approved).

(i). Selection of the respirators must be performed in accordance with ANSI Z88.2-1969, Practices for Respiratory Protection.

(ii). Use and care of the respirators must comply with all elements of 29 CFR 1910.134, Respirator Protective Equipment.

b) Safety Glasses/Goggles and Face Shields.

Safety eye wear and/or face protection shall be required when there is reasonable probability of injury that could be prevented by using this type of equipment. (Reference: 29 CFR 1910, Parts 132 thru 139)

c) Hearing Protective Devices.

Such devices shall be required when the noise exposure limit within the confined space exceeds those allowed in the Dept. of Defense Instruction 6055.1 (85dB). Emergency alarms shall be distinguishable when hearing protection is worn.

d) Hard Hats.

Head protection shall be required when there is a reasonable probability of injury that could be prevented by using this equipment. (Reference: ANSI Z89.1)

e) Gloves.

Gloves shall be required if work involves rough or sharp edges or hot items. The degree of protection shall be determined by the Safety Office. If toxic or irritating materials are involved, gloves made of impervious materials, and appropriate for the task at hand, shall be used.

f) Footwear.

Specific footwear may be designated by the Safety Office, while working in confined spaces if hazardous substances are present and identified. This footwear shall meet the requirements in 29 CFR 1910.136.

(9) Clothing

As determined by the SOHO, personnel entering a confined space shall wear full coverage clothing made of an approved impervious material if hazardous materials are present. Each confined space and each entry into a confined space shall be assessed by the SOHO individually to determine the most appropriate clothing, personal protective equipment, etc., to be used by the entrants for that project. Other body Protection required in specific operations such as welding (flame proof) shall be provided to insure worker safety.

(10) Confined Space Entry Equipment Requirements

(minimum).

- a) Approved self-contained pressure demand or airline supplied air respirator(s) (NIOSH/MSHA approved).
- b) Approved safety harness with D-ring(s) and life line (3/4" rope).
- c) Portable ladder approved for specific task.
- d) Approved personal protective clothing, boots, gloves, and hard hats.
- e) Approved portable lighting (spark proof).
- f) Outside ventilation source (approved fans).
- g) Sounding devices and two-way radio(s).
- h) Ground fault interrupter (GFI) for wet damp work.
- i) Approved hand tools.
- j) Water hose for washdown.
- k) Protective eye/face equipment.

- l) Plastic refuse bags with ties.
- m) Portable tripod and winch
- n) Two (2) 10 lbs ABC fire extinguishers.
- p) Approved hearing protection devices.
- q) Direct reading environmental monitoring equipment.

(11) Special Hazards

If it is necessary to perform other hazardous work inside the confined space, the nature of the job, the hazards and the necessary safety precautions shall be written for these tasks. The person responsible for approving the job (i.e., CSCS, etc) shall clearly describe the precautions on the permit form and shall be sure that all special precautions are communicated effectively to all those who will do the work. In certain cases other permits may be required (e.g., welding and cutting).

a) Wet Locations

Confined spaces which contains residual water or have wet surfaces due to condensation shall have all electrical equipment fed through a ground fault interrupter (GFI) to reduce the risk of electrical shock and other injuries.

NOTE: This does not include arc welding equipment located outside the confined space.

b) Hot work (Welding/Burning) Inside Confined Spaces.

i) All procedures for welding and cutting shall be performed as usual with personal protective equipment (PPE) and including the use of the permit system.

ii) A Continuous combustible gas detector shall be utilized and monitored by the trained employee (by an industrial hygienist/safety personnel in unusually hazardous cases). If the detector indicates the presence of such a gas in a confined space, all hot work, welding or cutting shall be stopped immediately and resumed only after it is determined that it is safe to do so.

iii) When welding or burning will take place inside the confined space, approved continuous airline respirators or self-contained pressure demand breathing apparatus shall be required for all persons inside the confined space.

iv) Welding and cutting (hot work) shall not be done if flammable dusts are present in the confined space or in the air around the confined space.

v) Cylinders of compressed gases used for welding shall never be taken into a confined space, and shall be turned off at the cylinder valve when not in use. Overnight and at the change of shifts, the torch and hose shall be removed from the confined space. Open end fuel gas and oxygen hoses shall be immediately removed from the enclosed spaces when they are disconnected from the torch or other gas-consuming devices.

c) Illumination

i) Personnel shall not enter spaces without an approved portable light (spark proof). The use of an open flame for light is prohibited.

ii) In confined spaces where a flammable atmosphere exist, only approved low voltage explosion proof/spark proof lights, properly identified and in good condition shall be permitted.

iii) Approved battery powered flashlights of 3 volts or less and properly marked for use only in hazardous areas shall be permitted when flammable atmospheres are present.

iv) All external powered illumination devices shall be of the approved type and equipped with ground fault interrupter (GFI).

v) Temporary illumination used in areas other than where flammable atmospheres are present shall meet all National Electrical Code and local requirements and be of the grounded type.

(12) Training

a) Confined Space Entrant

Upon approval and release of this document, The Safety and Occupational Health Office (SOHO) Confined Space Program, training in confined space procedures as well as rescue procedures shall be given to all personnel who will or may perform such work prior to initial assignment in a confined space and at least annually thereafter. The supervisors, and managers in conjunction with SOHO shall be responsible for adequately



training those employees assigned or likely to be assigned confined space work. As a minimum, training shall cover:

- i) Hazard recognition/Hazard Communication.
- ii) Emergency notification and procedures.
- iii) Use of personal protective equipment (PPE), with emphasis on respiratory protection equipment.
- iv) Electrical, Mechanical and de-energizing lockout/tag out procedures.
- v) Special equipment and tool use standard.
- vi) First Aid/Cardiopulmonary resuscitation (CPR)

b) Rescue Personnel

Rescue personnel shall be trained in the use of the equipment necessary to perform assigned rescue functions.

i) At least annually, rescue personnel shall practice removing victims through openings and portals of the same size, configuration and accessibility as those spaces to be encountered in an actual rescue.

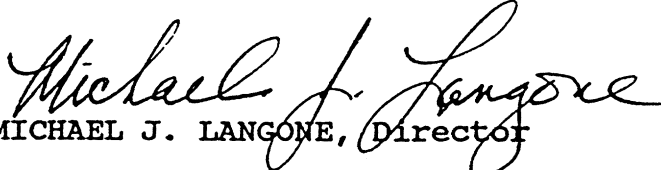
ii) Rescue personnel shall hold current certification in standard first aid and CPR.

iii) Rescue personnel shall receive the same training required for entrance personnel.

c) Documentation

The date, type of training and trainees' name shall be documented and maintained within the employee supervisor's file as well as in SOHO. Other pertinent training

records shall be maintained by the SOHO and in some cases the WHS  
Personnel Office files.

  
MICHAEL J. LANGONE, Director  
Safety and Occupational Health Office

## APPENDIX A

### Confined Space Location Listing

\* The Confined Space Listing will be provided upon completion.

**DANGER**

**CONFINED SPACE**

**DO NOT ENTER**

**(AUTHORIZED PERSONNEL ONLY)**

**PERMIT REQUIRED FOR AUTHORIZED ENTRY**

**FOR FURTHER INFORMATION REGARDING CONFINED  
SPACE ENTRY PROCEDURE, PLEASE CONTACT THE —**

**WATCH FOREMAN AT: (703) 697-4478**

## PERMIT INSTRUCTIONS

1. PERMIT MUST BE SUBMITTED AT LEAST 24 HOURS PRIOR TO ENTRY. EXCEPTIONS WILL BE MADE ON A CASE BY CASE BASIS BASED ON EMERGENCY NEED.
2. RESCUE OR SAFETY STANDBY PERSONNEL MUST BE ON IDENTIFIED ON PERMIT AND AVAILABLE DURING THE TIME POSTED ON PERMIT.
3. IF ATTENDANT AND ENTRANT WILL BOTH ENTER PERMIT IN SHIFTS, INDICATE BOTH NAMES ON BOTH ENTRANT(S) AND ATTENDANT(S) SPACES. AT NO TIME SHALL BOTH THE ATTENDANT AND ENTRANT BE IN THE CONFINED SPACE AT THE SAME TIME.
4. MONITORS MUST BE CALIBRATED PRIOR TO ENTRY AND BEFORE EACH SHIFT.
5. UPON COMPLETION OF PERMIT WORK, RETURN PERMIT TO THE WORK AREA SUPERVISOR
6. THE WORK AREA SUPERVISOR SHALL KEEP COMPLETED PERMITS ON FILE FOR TWO CONSECUTIVE YEARS.
7. EMERGENCY PHONE NUMBERS ARE AS FOLLOWS:

POLICE: 703-697-1001

FIRE: 703-697-1001

AMBULANCE: 703-697-1001 Joe

SOHB: 703-614-2686 Roy  
614-9873 John  
692-0884

10.9.3

**CONFINED SPACE ENTRY PERMIT****PERMIT MUST BE POSTED ON SITE AT ALL TIMES OF ENTRY**

PERMIT VALID FROM \_\_\_\_ AM/PM TO \_\_\_\_ AM/PM ON \_\_\_\_/\_\_\_\_/\_\_\_\_ (MM/DD/YY)

SITE LOCATION AND DESCRIPTION: \_\_\_\_\_

PURPOSE OF ENTRY: \_\_\_\_\_

WORK AREA SUPERVISOR: \_\_\_\_\_

ATTENDANT(S): \_\_\_\_\_

ENTRANT(S): \_\_\_\_\_

RESCUE PERSONNEL: \_\_\_\_\_

REQUIREMENT	DATE	TIME	REQUIREMENT	DATE	TIME
Lock/Out/De-Energize	_____	_____	Full Body Harness w / "D" Ring	_____	_____
Line(s) Broken-Capped-Blanked	_____	_____	Escape/Retrieval Equip.	_____	_____
Purge-Flush and Vent	_____	_____	Lifelines	_____	_____
Ventilation	_____	_____	Fire Extinguishers	_____	_____
Secure Area (Post and Flag	_____	_____	Lightning (Explosion Proof)	_____	_____
Breathing Apparatus	_____	_____	Protective Clothing	_____	_____
Resuscitator-Inhalator	_____	_____	Respirators	_____	_____
Standby Safety Personnel	_____	_____	Hot Permit	_____	_____

NOTE: Items that do not apply, enter N/A in blank.

**\*\* RECORD CONTINUOUS MONITORING RESULTS EVERY TWO HOURS \*\***

TEST(S) TO BE TAKEN	Permissible Entry Level	RESULTS
PERCENT OXYGEN	19.5% to 23.5%	_____
LEL	Under 10% of LEL	_____
CARBON DIOXIDE	Under 35 ppm	_____
HYDROGEN SULFIDE	Under 10 ppm	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

REMARKS: \_\_\_\_\_

TESTER NAME	MODEL/TYPE INSTRUMENT	CALIBRATED BEFORE SHIFT	SERIAL # OF UNIT
_____	_____	YES/NO (circle one)	_____
_____	_____	YES/NO (circle one)	_____

**SUPERVISOR AUTHORIZING ENTRY**ALL ABOVE CONDITIONS SATISFIED: YES/NO  
EMERGENCY POINT OF CONTACT:

Phone Number: